

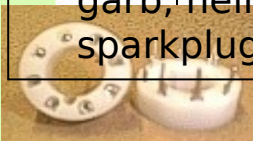
Nanotechnology Timeline at the U.S. Army Fort Monmouth Command

World War II Era

October, 1942

Catastrophic failure of electrical components in tropical war theater results in...

- Development of moisture repellent, fungus resistant, siliceous nanostructure film coatings to replace conventional wax coatings for electronic ceramic components
- Nanostructured film coatings approved for military terrain garb, helmets, and quick-start sparkplugs

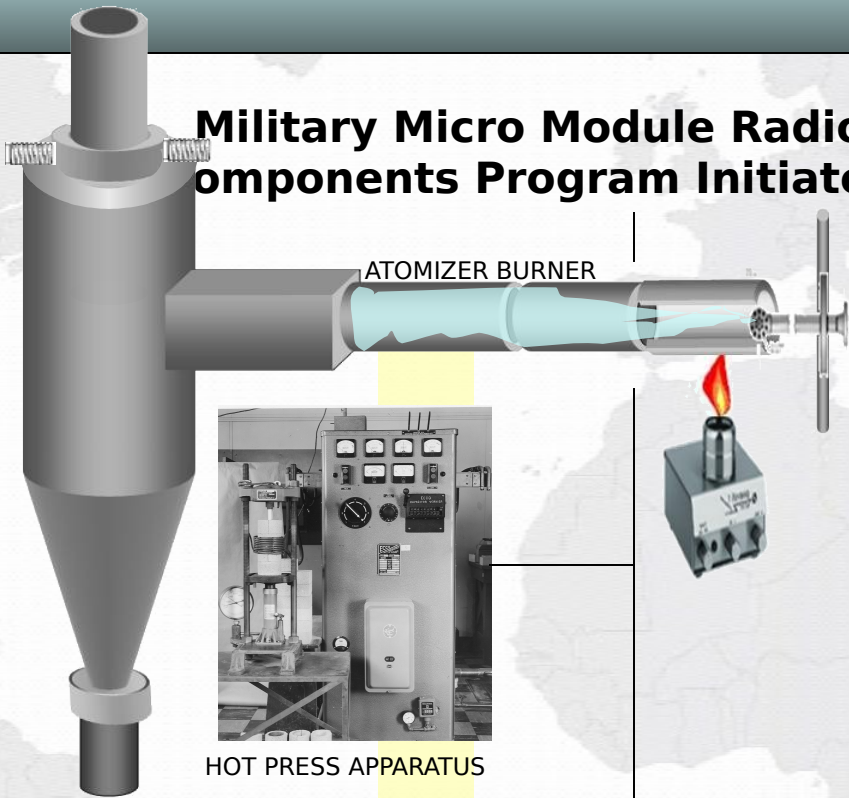


1944 Development of ultra-thin glass tapes as a substitute for mica capacitors when mica from India was blockaded

Synthetic mica for capacitor use became a multi-million dollar program via U.S. Bureau of Mines

The work accomplished from 1942 through the 1990's was made possible by the efforts of Mr. Sam DiVita and his staff at the U.S. Army Fort Monmouth Command including: Mr. R. Brandmayr, Dr. H. Wichansky, Mr. A. Brown, Mr. J. Charlton, Ms. A. Dunlap, Mr. R. Fischer, Mr. R. Sturzbecher, and Ms. B. Cianci

Military Micro Module Radio Components Program Initiated



May, 1961: Patent No. 2,985,506- Method of producing nanoscale Barium Titanate via combustible chemical alcoholate solution

July, 1962: Patent No. 2,990,602- Method of Hot-Pressing Ceramic BaTiO₃ Ferroelectric Nano-material

- Invention of the *ATOMIZER BURNER* for the development of sub-micron nanostructured BaTiO₃ particulate material
- Development of the *HOT PRESS* to form dense, nano-structured BaTiO₃ particulate material for miniature bypass capacitors
- Rutgers Un. Development of devitrifiable lithium alumina silicate to form zero coefficient of expansion material for use in RF coil forms.

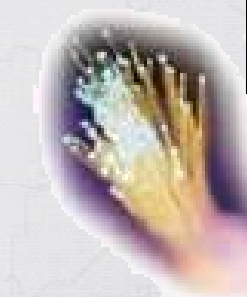


lead to the commercial application of Corning Pyrocera cookware

U.S. Army Introduces Optical Glass Fiber Technology to Replace Copper Wire

Commercial optical glass fibers fail to meet rigorous combat needs ...

- Hermetic nanostructured films solve stress corrosion problems caused by water infiltration on organic-coated fiber optic cables
- Sponsored programs through industry (Corning, HP, & Hughes Research) to develop very efficient fiber optic cables.



October, 1978: Patent No. 4,118,211 - Method of Maintaining the Strength of Optical Fibers

July, 1978: Invention Reg. H1461 - Abrasion Resistant Diamond Like Coating (DLC) for Optical Fibers and Method of Forming the Coating

With special thanks for the co-operative efforts of Mr. Gary P. Martin, Director CERDEC, Mr. Gary Blohm, Director Space and Terrestrial Communications Directorate and Dr. Barry S. Perlman, Director DARPA Liaison.

Information compiled by Steve Sarraf and designed by Lorraine Smith

Sam DiVita's Current CECOM CRADA Plans

Based on his research in the field of nanotechnology, S. DiVita suggests that ongoing projects address:

The problem of

★ **numerous metallic IC pinouts in conventional silicon chips, and the potential electronic effects of metal migration**

★ **diamond-like carbon acid resistant coating to protect fiber optic cable from such Homeland Defense threats as hydrofluoric acid**

★ **establish a catalog of nanoscale materials and their characteristics using**

D-Shaped transparent planar surfaced optical fiber substrate. Light is shown through the fiber core to activate the sub-micron optical particle for evaluation.

1940s

1950s

1960's

1970s

1980s

1990s

2000s